CATALOG DOCUMENTATION
EMAP-GREAT LAKES PROGRAM LEVEL DATABASE
1994 LAKE SUPERIOR NEARSHORE
STATION LOCATION DATA

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1. DATA SET IDENTIFICATION

1.1 Title of Catalog document

EMAP-Great Lakes Program Level Database
1994 Lake Superior Nearshore
Station Location Data

1.2 Authors of the Catalog entry

Jenny Kysely, ILS

1.3 Catalog revision date

26 February 1997

1.4 Data set name

LSSTA94

1.5 Task Group

Great Lakes

1.6 Data set identification code

520

1.7 Version

001

1.8 Requested Acknowledgment

These data were produced as part of the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP). If you plan to publish these data in any way, EPA requires a standard statement for work it has supported:

"Although the data described in this article has been funded wholly or in part by the U.S. Environmental Protection Agency through its EMAP-Great Lakes Program, it has not been subjected to Agency review, and therefore does not necessarily reflect the views of the Agency and no official endorsement should be inferred."

2. INVESTIGATOR INFORMATION

2.1 Principal Investigator

Stephen Lozano
U.S. Environmental Protection Agency
NHEERL-MED

2.2 Investigation Participant - Sample Collection

Floyd Boetcher
U.S. Environmental Protection Agency
NHEERL-MED

2.3 Investigation Participant - Sample Collection

Gary Phipps
U.S. Environmental Protection Agency
NHEERL-MED

2.4 Investigation Participant - Sample Collection

James Gangl
SAIC
(Currently, University of Minnesota)

2.5 Investigation Participant - Sample Processing

Jill Scharold
U.S. Environmental Protection Agency
NHEERL-MED

3. DATA SET ABSTRACT

3.1 Abstract of the Data Set

The EMAP-Great Lakes STATIONS data set contains geographic information on stations in the nearshore resource class along the south shore of Lake Superior. These stations were randomly located, based on a nationwide grid. The geographic coordinates of a site are given in latitude and longitude.

3.2 Keywords for the Data Set

Sampling stations, geographic, nearshore, Lake Superior, latitude, longitude

4. OBJECTIVES AND INTRODUCTION

4.1 Program Objective

The Environmental Monitoring and Assessment Program (EMAP) was designed to periodically estimate the status and trends of the Nation's ecological resources on a regional basis. EMAP provides a strategy to identify and bound the extent, magnitude and location of environmental degradation and improvement on a regional scale based on station sites randomly located in the Great Lakes. Base grid and three-fold enhanced sampling sites from nearshore Lake Superior are included in this data set.

4.2 Data Set Objective

The STATIONS data set provides geographical characterization of base and three-fold enhancement sampling sites along the south shore of the nearshore region of Lake Superior.

4.3 Background Discussion

A probability-based sampling design has been used in the EMAP-Great Lakes region so that the Great Lakes resources and characteristics were sampled in proportion to their areal distribution. This sampling design makes it possible to estimate, with known confidence, the proportion or amount of area having defined environmental characteristics. A series of indicators that were representative of the overall health of freshwater resources were measured at each site. These indicators were designed to address three major attributes of concern to freshwater scientists, environmental managers, and the public: 1) biotic integrity or the existence of healthy, diverse, and sustainable communities; 2) pollutant exposure or the condition of the physico-chemical environment in which biota live and 3) societal values or indicators related to public use of freshwater resources.

4.4 Summary of Data Set Parameters

STATIONS data set values were based on the geographic location of the station, independent of the station visit.

5. DATA ACQUISITION AND PROCESSING METHODS

5.1 Data Acquisition

5.1.1 Sampling Objective

The primary goal was to be within the assigned latitude and longitude of a sampling site. This objective was set forth so the sample would be collected as true to the exact location selected during the random selection process.

5.1.2 Sample Collection Methods Summary

A complete description of the sampling design can be found in EMAP-GL Studies in Nearshore Lake Superior Research Work Plan (Lozano 1994).

The primary resource classes for the Great Lakes include the offshore, nearshore, harbor and embayment areas, and coastal wetlands. The definition of the offshore and nearshore zones is the boundary between offshore and nearshore areas is the depth contour equal to the mean depth of the lake. The nearshore resource class was sampled for this study, and the nearshore resource class consists of water adjacent to the shoreline and no more than 100 meters in depth, and the offshore is the remaining portion of the lake.

The EMAP sampling strategy uses a global grid to identify sampling sites. This grid is divided into sub-grids in accordance with the needs of the ecosystem type. The baseline grid used in EMAP is an hexagonal plate containing a triangular grid approximately 12,600 grid points distributed randomly over the conterminous United States. These grid points are about 27 km equidistant and large, contiguous hexagons can be scribed around each grid point, each with an area of 635 sq. km. Initial randomization of the grid on the United States establishes the systematic sample (i.e., uniform and regular grid point and small hexagons) as a probability sample. The grid structure reflects the importance of achieving geographic coverage of ecological resources. The uniformity of spatial coverage provided by a grid ensures that each ecological resource can be sampled in proportion to its geographic presence in the United States and that all ecological resources can be included in the monitoring program.

The grid density also can be increased to sample rare resources, or resource classes (e.g., offshore, nearshore, harbors and embayments, and wetlands for the Great Lakes ecological resource). The grid arrangement also makes it easy to either increase or decrease the grid density by multiple factors of three-, four-, and sevenfold and retain the basic triangular structure important for consistent spatial coverage and sampling design requirements. The triangular nature of the grid allows greater flexibility in these enhancement factors than a square or rectangular grid.

As the frame of the nearshore resource class for Lake Superior, bathymetric maps from NOAA have been digitized on a 4 km grid (2 km grid for other lakes) and are available in a Geographic Information System (GIS) format.

A three-fold enhancement was used to characterize the condition of the nearshore resource class of Lake Superior, and for determining the

number and spatial extent of the sample sites in this zone. The nearshore zone consists of water contiguous to the shoreline and no more than 100 meters in depth. Twenty-seven sites, located on the southern shore of Lake Superior, were sampled in 1994. The south shore of Lake Superior represents a discrete sampling unit based on climate, soil, and bottom types.

5.1.3 Beginning Sampling Date

8 August 1994

5.1.4 Ending Sampling Date

20 August 1994

5.1.5 Platform

Sampling was conducted from a 28 meter research vessel, the R/V Explorer, owned and operated by the U.S. EPA, NHEERL-MED.

5.1.6 Sampling Equipment

The sampling equipment used was a Magellan Nav 5200 DX.

5.1.7 Manufacturer of Instrument

Magellan Systems Corporation, 9600 Overland Ct., San Dimas, CA.

5.1.8 Key Variables

The latitude and longitude of the station location were determined at the time of sampling.

5.1.9 Collection Method Calibration

Self-calibration information from satellites. Stationary ship was used as a reference point.

5.1.10 Collection Quality Control

5.1.11 Sample Collection Method Reference

Strobel, C.J. and S.C. Schimmel, 1991. Environmental Monitoring and Assessment Program-Near Coastal. 1991 Virginian Province, Field Operations and Safety Manual. U.S. EPA, NHEERL-AED, Narragansett, RI. June 1991.

5.2 Data Processing and Sample Processing

5.2.1 Sample Processing Objective

Sample processing methods not applicable for station location information.

5.2.2 Sample Processing Methods Summary

Not applicable.

5.2.3 Sample Processing Method Calibration

Not applicable.

5.2.4 Sample Processing Quality Control

Not applicable.

5.2.5 Sample Processing Method Reference

5.2.6 Sample Processing Method Deviations

6. DATA ANALYSIS AND MANIPULATIONS

Most values in the Stations data set were assigned, based on geographic location.

6.1 Name of New or Modified Values

None

6.2 Data Manipulation Description

None

6.3 Data Manipulation Examples

Not applicable.

7. DATA DESCRIPTION

7.1 Description of Parameters

#	Name	Type	Length	Format	Parameter Label
1	STA_NAME	Char	10	10.	Station Name
2	DEPTH	Num	3	3.	Station Depth (m)
3	LAT_STD	Num	10	2.7	Latitude (decimal degrees)
4	LNG_STD	Num	9	2.6	Longitude (-decimal degrees)

7.1.1 Precision to which values are reported

Latitude and longitude were measured in decimal degrees.

7.1.2 Minimum Value in Data Set

Not applicable.

7.1.3 Maximum Value in Data Set

Not applicable.

7.2 Data Record Example

7.2.1 Column Names for Example Records

STA_NAME DEPTH LAT_STD LNG_STD

7.2.2 Example Data Records

LS94-76401 90 46.884333 -84.7506
LS94-77980 88 46.972267 -85.139733

8. GEOGRAPHIC AND SPATIAL INFORMATION

8.1 Minimum Longitude

-91 deg 43.516' W

8.2 Maximum Longitude

-84 deg 45.036' W

8.3. Minimum Latitude

46 deg 26.420' N

8.4 Maximum Latitude

47 deg 18.180' N

8.5 Name of Area or Region

Nearshore Lake Superior
Stations were located along the southern shore of the Nearshore resource class of Lake Superior from Duluth, Minnesota to Sault Ste. Marie, Michigan. Nearshore sites were located within the 100 meter depth contour. The area includes Minnesota, Wisconsin, and Michigan.

9. QUALITY CONTROL/QUALITY ASSURANCE

9.1 Measurement Quality Objectives

Not applicable.

9.2. Data Quality Assurance Procedures

None.

9.3 Actual Measurement Quality

Not applicable.

10. DATA ACCESS

10.1 Data Access Procedures

Data can be downloaded from the EMAP Website.

10.2 Data Access Restrictions

Not applicable.

10.3 Data Access Contact Persons

Stephen J. Lozano
U.S. E.P.A. NHEERL-MED
(218)720-5594
(218)720-5539 (FAX)
lozano.stephen@epa.gov

10.4 Data Set Format

Data from the Website are in ASCII fixed format.

10.5 Information Concerning Anonymous FTP

Not accessible.

10.6 Information Concerning WWW

Data can be downloaded from the EMAP Website.

10.7 EMAP CD-ROM Containing the Data Set

Data are not available on CD-ROM.

11. REFERENCES

Hedtke, S., A. Pilli, D. Dolan, G. McRae, B. Goodno, R. Kreis, G. Warren, D. Swackhamer, and M. Henry. 1992. Great Lakes Monitoring and Research Strategy: Environmental Monitoring and Assessment Program. USEPA, Office of Research and Development, ERL-Duluth, Duluth, Minnesota. EPA/602/R-92/001. 204 p.

Lozano, S. 1994. 1994 Research Work Plan EMAP-Great Lakes Studies in Nearshore Lake Superior.

12. TABLE OF ACRONYMS

NA

13. PERSONNEL INFORMATION

Stephen J. Lozano
U.S. Environmental Protection Agency
NHEERL-MED
6201 Congdon Blvd
Duluth, MN 55804
(218)529-5205
(218)529-5003 (FAX)
lozano.stephen@epa.gov

Gary L. Phipps
U.S. Environmental Protection Agency
NHEERL-MED
6201 Congdon Blvd
Duluth, MN 55804
(218)529-5205
(218)529-5003 (FAX)
phipps.gary@epa.gov

Jill V. Scharold
U.S. Environmental Protection Agency
NHEERL-MED
6201 Congdon Blvd
Duluth, MN 55804
(218)529-5205
(218)529-5003 (FAX)
scharold.jill@epa.gov

Floyd L. Boettcher
U.S. Environmental Protection Agency
NHEERL-MED
6201 Congdon Blvd
Duluth, MN 55804
(218)529-5205
(218)529-5003 (FAX)
boetcher.floyd@epa.gov